NATIONAL WORKSHOP ON STANDARD TREATMENT PROTOCOL
GUIDELINES FOR THE MANAGEMENT OF CEREBRAL PALSY
NIA, Jaipur, 17-18 Jan 2019
General Description and Concept of Cerebral Palsy

DEFINITION

- Cerebral palsy is an umbrella term covering a group of **non-progressive** but often changing **motor impairment** syndrome, Secondary to the lesions or anomalies of the brain arising in **early stage of the development,** often associated with epilepsy and abnormalities of speech, vision, deafness and intellect resulting from a defect or lesion in the developing brain.
- The motor disorder of Cerebral palsy are accompanied by disturbance of sensation, perception, cognition, communication, behavior and secondary musculoskeletal problem.

PREVALENCE

Worldwide incidence of Cerebral Palsy is 2.5/1000 live births and for India it is 3/1000 live births. It is difficult to estimate the precise magnitude of the problem since mild cases are likely to be missed. Approximately 1-2 per 100 live births is a reasonable estimate of the incidence.[i] Among these Spastic CP is the most common type, occurring in 70% to 80% of all cases.

CEREBRAL PALSY IN AYURVEDA

In Ayurveda there is no single disease which exactly have similarity with Cerebral Palsy. Certain condition explained in Ayurveda which have close similarity with CP are:

- *Pangulya*
- *Mookatva*
- *Jadtva*
- *Ekanga Rog*
- *Sarwanga Rog*
- *Pakshavadha etc.*

Aacharya Harita described a disease which is caused by brain injury, it manifests as a muscular spasticity and considered as incurable in nature.

"(Moordhni) Abhighaten yo jato na sa sadhyah prataanakah " (Hareeta 3rd /20/25)

This may be considered as *Mastishka-Ghaat Vata-Vyadhi* or Cerebral Palsy.

ETIOLOGY

Prenatal

- Maternal-fetal infections e.g. rubella (German measles), cytomegalovirus (CMV), and toxoplasmosis.
- Coagulation disorders (coagulopathies)
- Intrauterine ischemic events occur in between 10-12 weeks of gestation resulting in hemiplegic or quadriplegic pattern of CP.
- Substance that affect fetal brain development / increases the risk for premature delivery and LBW, such as alcohol, tobacco, or cocaine resulting in CNS infarctions and cerebral palsy especially hemiplegia.

Natal

Birth Asphyxia-

- Tight Nuchal Cord (An umbilical cord around the baby's neck)
- Prolapsed Cord

Perinatal

- Premature birth may lead to PVL and/or IVH
- Perinatal Asphyxia
- Perinatal Infection
- PVL leading to Spastic diplegia
- Late IIIrd Trimester Ischemic insult resulting in Congenital spastic hemiplegia

Postnatal

- Rh Incompatibility
- Serious Brain infections e.g. meningitis and encephalitis.
- Hyperbilirubinemia (*Kernicterus*) leading to Athetoid quadriplegia associated with Sensorineural hearing loss.
- Metabolic Disturbances (e.g. hyperbilirubinemia)
- Seizure disorder in early neonatal period.

Other Causes

- Lead Poisoning, Trauma, Shaken Baby Syndrome etc.
  (Subdural hematoma, retinal haemorrhage, and cerebral edema)
- **In young children:**
  Choking by Foreign Objects e.g. Toys & Pieces of Food

Ayurveda *Nidana* of Cerebral Palsy

Aetiology for the CP disease can be classified in the following manner:

1. *Garbha Purva Nidana*
2. *Garbha Kaleen Nidana*
3. *Prasava Kaleen Nidana*
4. *Prasavottara Nidana*

***Garbha Poorva Nidana*:**

Causative factors for *vikriti* may even exist before *garbhadhana* in the genetic structure-

- *Tulya Gotra Vivaha*
- *Bija Dusti*
- *Ashaya Dusti*
- *Atma Karma*
- *Kala Dusti*

Garbha Kaleen Nidana

- Improper *Garbhini Paricharya*
- *Dauhrid Apachara*
- *Krimi* (Infections-TORCH etc.)
- *Abhighat*
- *Dhumra Pana*
- *Madhya Pana*
- *Vata-Prakopak Aahara and Vihara*

Prasava Kaleen Nidana

- *Vilambita Avi*
- *Akala Paravahana*
- *Kaalateet Prasava*
- *Moordhabhighata*

Prasavottara Kaleen Nidana

- *Improper/Delayed Prana Pratyagaman*
- Effect Of *Grahas* (Infectious disorders)
- Effect Of *Nija* and Agantuja Disorders

RISK FACTORS

Mild Risk

1. Preterm, Weight 1500g &<2500g
2. HIE grade I
3. Transient hypoglycemia
4. Suspected Septicemia
5. Neonatal hyperbilirubinemia >15mg/dl
6. IVH grade I

Moderate Risk

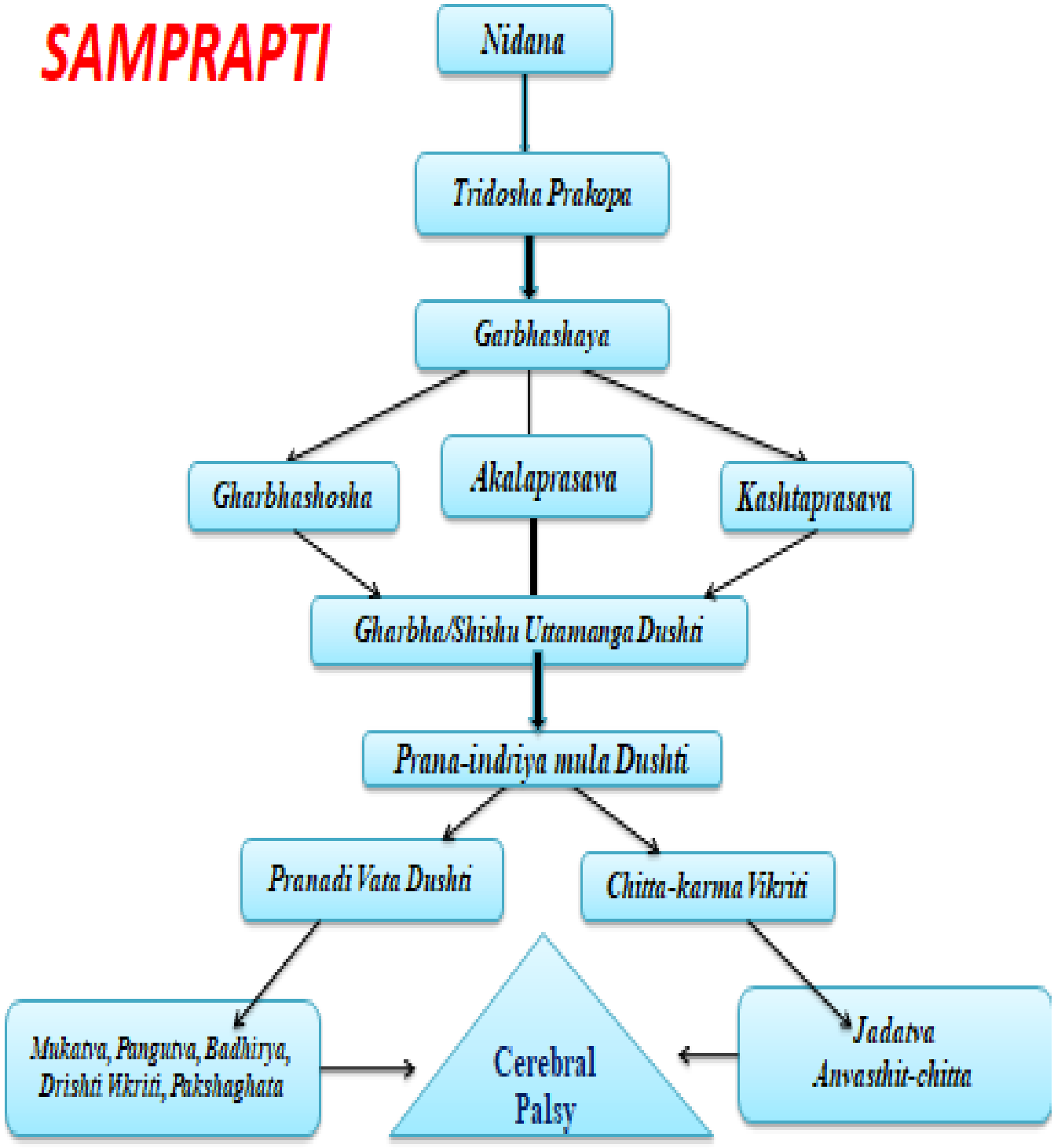
- Babies with B.wt.-1000g-1500g & gestational age <33 weeks
- Twins/triplets
- Moderate Neonatal HIE
- Hypoglycemia, Blood sugar <25mg/dl

- Neonatal Sepsis
- IVH grade 2

High Risk:

- Babies with Birth weight <1000g and/or gestational age <28 weeks.
- Major morbidities such as interventricular hemorrhage, and periventricular leucomalacia
- Perinatal asphyxia – Apgar score 3 or less at 5 min and/or hypoxic ischemic encephalopathy
- Surgical conditions like Diaphragmatic hernia, Tracheo-oesophageal fistula
- Small for date (<3rd centile) and large for date (>97th centile)
- Mechanical ventilation for more than 24 hours
- Persistent prolonged hypoglycaemia and hypocalcaemia
- Seizures
- Meningitis
- Shock requiring inotropic/vasopressor support
- Infant born to TORCH infection and HIV-positive mothers
- Twin to twin transfusion
- Neonatal Kernicterus (bilirubin encephalopathy), Major malformations
- Inborn errors of metabolism/other genetic disorders
- Abnormal neurological examination at discharge

SAMPRAPTI


Nidana
Tridosha Prakopa
Garbhashaya
Gharbhashosha
Akalaprasava
Kashtaprasava
Gharbha/Shishu Uttamanga Dushti
Prana-indriya mula Dushti
Pranadi Vata Dushti
Chitta-karma Vikriti
Mukatva, Panguta, Badhirya, Drishti Vikriti, Pakshaghata
Cerebral Palsy
Jadatva Anvasthit-chitta

Samprapti Ghatakas	
Dosha	*Vata Pradhana Tridosha*
Dushya	*Rasa, Rakta, Mamsa, Asthi, Majja*
Agni	*Dhatwagni*
Srotas	*Pranavaha to Majjavaha*
Srotodushti	*Sanga, Vimargagamana*
Adhishthana	*Sharira and Manas*
Vyaktasthana	*Sarvanga sharira*
Rogamarga	*Madhyama*
Vyadhi Swabhava	*Yapya*

Disease Description

Physiological Classification of CP

1. Spastic:
   - Monoplegic
   - Diplegic
   - Hemiplegic
   - Quadriplegic
2. Ataxic
3. Athetoid
4. Hypotonic
5. Mixed

1. Spastic Cerebral Palsy (Pyramidal)

Clinical features-

- Abnormally persistent neonatal reflexes
- Feeding difficulties
- Persistent cortical thumb after three month of age
- Firm grasp
- Scissoring posture

Associated condition: Variable degrees of mental, visual and behavioral problems, Seizures are common.

This is purely Vatik disease with predominance of Pran, Vyan and Apan Vata.

Spastic Cerebral palsy - Sub types

1A.Spastic Monoplegia – *Ekang Vata*

Only one extremity is affected.

1B.Spastic Diplegia - *Sarvang/Adharang Vata*

Most common form of the spastic CP, all four limbs are affected, but the upper limbs are minimally involved. The lower limb involvement is symmetrical.

- Difficulty in walking
- Scissoring of posture
- Toe walking

Associated condition:

- Seizure (Generalized tonic clonic type)
- Strabismus (in 2/3rd cases)
- Mental retardation
- Hip problems (Mainly dislocations)

1C. Spastic Hemiplegia – *Ardhang Vata*

- There is involvement of the arm and leg on the same side,

Clinical features-

- Abnormal persistent fisting
- Abnormal posture
- Defective fine motor activity
- Abnormal gait (Hemiplegic gait)
- Growth retardation of distal arm , hand and foot
- Mental retardation and Seizure are the associated features.

1D. Spastic Quadriplegia/ Tetraplegia : *Sarvang Vata*

- All four limbs are involved.
- Upper limbs may be more severely affected than the lower and the patients are severely disabled.

Clinical features-

- Feeding difficulties - Swallowing problem
- Absent bowel and bladder control
- Speech problems
- Positional deformities- Opisthotonus posture, Hip dislocation, Scoliosis, Contractures

Associated condition:

- Severe mental retarded, visual and hearing deficit,
- Convulsions, Epilepsy
- Microcephaly

2. Ataxic CP

- This is least common form of CP affecting between 5-10 percent. Damage to the cerebellum affect balance and coordination.

Clinical features-

- Unsteady gait
- Movement incoordination (For Motor skills)
- Hypotonia and tremors

Associated condition:

- Spasticity
- Visual and/ or auditory processing difficulty
- Athetosis
- Nystagmus
- Dysarthria

Kaphavrita Prana Vata dominency with deficit Tarpak Kapha

3. Athetoid CP

- Damage of basal ganglia due to Kernicterus

Two Sub types:

- **Dystonic type:** Disturbance of tone, posture and purposeful movements are affected.

Clinical features- Extreme rigidity, facial grimacing, and truncal twisting.

- **Choreo-athetoid type:** Seen in babies with neonatal hyperbilirubunemia.

Clinical features- Choreiform movements seen in muscles of extremities, face, neck and trunk, increases during voluntary activity.

IQ is within normal range.

Associated condition: Upward gaze, High degree hearing loss, speech defects

Prana- Udana- Vyana Vata Predominence

4. Hypotonic CP

Clinical features:

- Hypotonia
- Marked motor delay
- Mental retardation

Hypotonia is a common predecessor sign of both spastic and athetoid cerebral palsy usually during first 4 months of age. Before labeling as hypotonic CP, other causes of hypotonia must be excluded.

Kaphavrita Vata Predominence

5. Mixed CP

- Extensive brain lesions.
- These children are less likely to survive. Approximately 10 % of children suffering from CP have a combination of two or more types.

Clinical features :

- The most common presentation of mixed CP is a combination of spastic and athetoid.

Associated condition:

- Language impairment
- Deficits in attention and cognition

Involvement of all the three Doshas with predominance of Vata & Kapha

Common clinical features of Cerebral Palsy

- All types of CP are characterized by abnormal muscle tone, reflexes, motor development and coordination.
- Irregular posture, either very floppy or very stiff body.
- There can have joint and bone deformities like contractures, tight muscles and permanently fixed joints.
- The classical symptoms are spasticity, unsteady gait, problems with balance other involuntary movements i.e. spasms, athetosis.
- Scissoring gait and toe walking in patients who are able to walk.
- Motor dysfunction varying from slight awkwardness or weakness in very mild form and disability to perform coordinated movement in severe impairment.
- Secondary conditions include Seizures, Epilepsy, Apraxia, Dysarthria or other communication disorders, Eating problems, Sensory impairments, Mental retardation, learning disabilities and/or behavioral disorders.
- Certain Clinical features described in *Skanda Graha*[ii], *Skanda*[iii] *Apasmara*[iv] and *Naigmesh*[v] in Graha Roga by Acharya in Ayurvedic texts are very closely resemble with clinical features of different types of cerebral palsy.

Early warning signs for cerebral palsy

- Persistence of neonatal reflexes
- Persistence of clonus/ irritability/ crying
- No social smile by 3 months
- Poor head control at 4 months
- Not sitting alone by 8 months
- Abnormal or asymmetrical crawling
- Abnormal posturing or hypotonia
- Not standing alone by 12 months
- Difficulty in feeding, swallowing, chewing
- Preferential unilateral hand use before 18 months

DIAGNOSIS AND ASSESSMENMT OF CEREBRAL PALSY

Shiromarmabhighata (injury to brain) occurs during in utero at the time of delivery or after the birth of a baby. It may be manifested in any one or in mixed form viz. *Ardita*(facial paralysis), *Chakshu-vibhrama*(squint/nystagmus), *Manyastambha*(neck

rigidity), *Udveshtana* (body spasm or tonic spasm), *Cheshtanasha*(loss of motor activities including limbs), *Lalasrava* (drooling),*Mookata*(dumbness), *Gadgadatva* (speech defect), *Swarahani*(loss of speech), *Vadana-jihamtva*(facial spasm or bending). Such children need early treatment on the line of *VataVikara* such as *Snehadi* therapy.

DIAGNOSIS

A. Ayurvedic features

CLINICAL FEATURES OF CEREBRAL PALSY		
	Ayurvedic terms	**Contemporary medical terms**
Shiroabhighataja[vi]	मन्यास्तम्भ	Torticollis
	अर्दितं	Facial Paralysis
	चक्षुर्विभ्रम	Rolling of Eyeballs
	चेष्टानाश	Loss of Movement
	मूक	Muteness
	गद्गद	Stammering
	लालास्राव	Salivation
Shiromarmabhighataja [vii]	मूकता	Dumbness
	स्वरवैकृत	Abnormality of voice
	अरसग्राहिता	Loss of taste sensation
	बाधिर्यं	Deafness
	गन्धाज्ञानं	Anosmia
	भ्रूपुच्छान्तयोरधोऽक्ष्णोर्बाह्यतोऽपाङ्गौ	At the end of eyebrows below outside the eyes are *ApangaMarma*

	अन्ध्यं दृष्टयुपघातो	Blindness & Defects of vision
Vataja-Nanatamaja[viii]	गुल्फग्रहश्च	Stiff Ankle
	पाङ्गुल्यं	Paraplagia
	खञ्जत्वं	Lameness
	कुब्जत्वं	Kyphosis
	वामनत्वं	Dwarfism
	त्रिकग्रहश्च	Arthritis of Sacroiliac joint
	पृष्ठग्रहश्च	Stiffness of back
	बाहुशोष	Atrophy of arm
	ग्रीवास्तम्भ	Stiffness of neck
	कण्ठोद्ध्वंस	Hoarseness of voice
	हनुभेद	Pain in jaw
	मूकत्वं	Aphasia
	वाक्सङ्ग	Lalling speech
	अरसज्ञता	Ageusia
	घ्राणनाश	Anosmia
	अशब्दश्रवणं	Tinnitus
	उच्चैःश्रुति	Hard of hearing
	बाधिर्यं	Deafness
	अक्षिव्युदासश्च	Ptosis of eyelids
	एकाङ्गरोग	Monoplegia
	सर्वाङ्गरोगश्च	Paraplegia
	पक्षवध	Hemiplegia

	आक्षेपक	Clonic convulsion
	अस्वप्न	Insomnia
	अनवस्थितचित्तत्वं	Unstable mentality
Vata- Prakopa[ix]	सङ्कोचः पर्वणां	Contracture in joints
	प्रलापश्च	Delirium
	अक्षिजत्रूणां ग्रीवायाश्चापि हुण्डनम्	Crookedness of eyes, clavicular region and neck

Diagnosis of different types of CP with Doshic configuration-

Type of CP	**Etiology**	**Symptoms**		**Dosha**	**Specific *Dosha* involved**
Spastic	• PVL(Periventricular leucomalacia) • Intraventricular haemorrhage • Cerebral atrophy • Brain malformation • Asphyxia injury • Maternal factors and infections • Metabolic causes	**Sub-Types**	**Symptoms**		
		Monoplegia	One limb involved	V	*VyanaVata*
		Diplegia	Any two limbs affected	VP	*VyanaVata*
			cognition problem, MR	PV	*Sadhaka Pitta And Prana Vata*
			Difficulty in walking	VK	*VyanaVata*
			Scissor gait	VK	*VyanaVata*
			Toe walking	V	*VyanaVata*
		Quadriplegia	Opisthotonus	V	*VyanaVata*
			Feeding difficulty	V	*UdanaVata*

			Absent bowel bladder control	V	*ApaanaVata*
			Speech problem	V	*UdanaVata*
			MR, Visual disturbance	VPK	*Prana Vata, Aalochaka Pitta, Sadhaka Pitta, Tarpaka Kapha*
Ataxic	Damage to cerebellum	Unsteady gait		VK	*VyanaVayu, ShleshakaKapha*
	Extra pyramidal system, hypothalamus	Movement incordination		VK	*Vyana And PranaVayu, ShleshakaKapha*
		Hypotonia		KV	*Prana Vata, Sadhaka Pitta, Tarpaka Kapha*
		Tremors		KV	*Prana Vata, Sadhaka Pitta, Tarpaka Kapha*
		Dysarthria		KV	*Prana Vata, Sadhaka Pitta, Tarpaka Kapha*
		Nystagmus		KV	*Prana Vata, Sadhaka Pitta, Tarpaka Kapha*
		Athetosis		KV	*Prana Vata, Sadhaka Pitta, Tarpaka Kapha*
Athetoid /dyskinetic	• Damage to basal ganglia • Kernicterus	**Sub-Types**	**Symptoms**		
		Dystonic	Disturbance of tone, posture and action ,	KV	*TarpakaKapha, ShleshakaKapha,*

			extreme rigidity, trunkal twisting and purposeful movements are affected		*PranaVata And VyanaVata*
		Choreoatheto id	Choreiform movement of extremities, face, neck and trunk, upward gaze palsy	KV	*Tarpaka Kapha, Vyana Vata,Prana Vata*
			hearing loss		*UdanaVata*
			Speech defects		*UdanaVata*
Hypoto nic			Hypotonia Motor delay MR		*Tarpaka Kapha, Sadhaka Pitta Vyana Vata,Prana Vata*
Mixed	Extensive brain lesion		Mixed presentation	VK	

B. Nine Steps for Diagnosis Process

Step 1: Parental Observation

Step 2: Clinical Observation (Refer------)

Step 3: Motor Skill Development Analysis (Refer scales---------)

Step 4: Medical History Review (Refer aetiology & clinical features.....)

Step5: Documenting Associative Conditions, Co- Mitigating Factors, and Ruling out other Conditions (Refer differential diagnosis-----)

Step 6: Obtaining Test Results (Refer investigations-----)

Step 7: Diagnosis

Step 8: Obtaining a second Opinion

Step 9: Determining Cause

C. Differential Diagnosis

NEURODEGENERATIVE DISORDERS	**CEREBRAL PALSY**
Progressive	Non Progressive
Familial Pattern of disease	Not familial pattern
HYDROCEPHALUS AND SUB DURAL EFFUSION	**CEREBRAL PALSY**
Head size is large	Head size normal/microcephaly
Fontanel may bulge, sutures separate	Fontanel and sutures usually normal
BRAIN TUMOURS	**CEREBRAL PALSY**
Progressive lesion	Non Progressive lesion
Symptoms of increased intracranial pressure evident	Symptoms of increased intracranial pressure not evident
MUSCLE DISORDERS	**CEREBRAL PALSY**
Progressive	Non Progressive
CPK elevated and muscle biopsy is confirmatory	CPK not elevated
OCULAR TELENGIECTASIA	**CEREBRAL PALSY (ATAXIC)**

It develop in early childhood	Develop earlier along with other CP features

D. Investigations

1. Laboratory-

- Thyroid Profile
- Metabolic Screen(including urine for organic acids, plasma amino acids, acylcarnitine profile, very long chain fatty acid, lactate, ammonia etc.)
- Genetic testing- Karyotyping (To make confirm diagnosis/to rule out similar disorders)

2. Radio-imaging-

- MRI/ CT Scan

3. Others-

- BERA
- Audiometry
- Fundoscopy
- EEG
- Nerve conduction Study
- Muscle Biopsy
- Cognition evaluation

E. Assessment Criteria

1. GMFCS (Gross Motor Function Classification Scale)- स्थूलकर्मेन्द्रियकार्यवर्गीकरणमापदण्ड
2. Modified Ashworth Scale-संशोधितएशवर्थ(कर्मेन्द्रियआंकलन)मापदण्ड
3. AmielTison Method- एमिलटाइसनकर्मेन्द्रियआंकलनविधि
4. Hammersmith Infant Neurological Examination-हेमरस्मिथबालनाडीपरीक्षण
5. SOMA(Schedule for Oral-motor Assessment in Children with Dysphagia)- बालकोमेमुख- कर्मेन्द्रियआंकलनअनुसुची

Disclaimer: The protocol of management given below is based the collective effort of several Kaumarbhritya experts across the country and not the last word in the management. However this document of treatment has to be considered as the first line substratum for further discussions and feedback.

The drug suggestions given in the list are from the experiences of several practitioners. The medicines can be re considered by sticking on the principles given in each heading. The users of these guidelines are free to select the drugs as per the need of the condition and regional availability without compromising with the science.

MANAGEMENT OF CP

INTRODUCTION:

Cerebral Palsy is a complex syndromic presentation which required multi-mode approach in management. Some general guidelines are given below:

- As a general principle, CP is a disease of involvement of all the three *doshas*, with predominance of *Vata* in spastic CP and *Kapha-Vata* in atonic CP.
- In all cases of CP an initial phase of *Deepana, Pachanana* and *Rukshana* procedures as well as medicines should be done for at least for 5-7 days, in order to get a *Nirama* state of the patient.
- It should be followed by *Shodhana [Mridushodhana*] followed by *Basti karma*.
- Once the procedure based treatment course is completed, *Shamanaoushadhis* and *Rasayana* drugs are to be advised for long term use.
- The *Shamana* and *Rasayana* treatments need monthly evaluation and revision if required.
- One course of IPD management in every 4months has to be repeated.
- Assessments in every third month have to be done and effective management should give positive outcome in each assessment.
- Whenever a particular line of management adopted is not giving the desired results, re-evaluation of the approach should be considered.
- Internal medication should be carefully selected when patient is already is on medication from other systems, to avoid drug to drug interactions.
- For SOP of *Panchkarma* procedures, the CCRAS SOP on *Panchkarma* may be adopted, using suitable modification to the age and condition of the child.

Schedule of IPD procedures: a course of 24 days [including Nasya 31 days]

- *Rukshana* for 5 days

- *Snehana* and *Swedana* for 7 days
- *Basti* as per type of *Basti* Schedule[*Chaturbhadra Kalpa Basti*]
- *Nasya* for 7 days

Principle of management:

1. **RUKSHANA** [INITIAL- GENERAL GUIDELINES]
    - Procedure based therapies
        - *Udwarthana*
        - *Dhanyamlaparisheka*
        - *Churnapindasweda*
        - *Takradhara*
        - *Pradhamana*
        - *Sirolepa [*without oil*]*
        - *Sarvangalepana*
        - *Atapasevena*
        - *Vyayayama*
    - *Samana* medicines
        - *Deepana+ Pachana* [Examples]
            - *Panchakolachurna*
            - *Chitrakadivati*
            - *Hingu Ashta churna*
            - *Trikatu*
        - Diets
            - *Takra*
            - *Ushnambu*
        - *Anulomana*
            - *Triphala churna*
            - *Hareetaki churna*

***Churna* for procedures- [Examples]**

For- *Pitta Vata- JadamayadiChurna*

Kaphavata- Kolakulathadi Churna

2. **SNEHANA GENERAL**

- Procedure Based Therapies[PBT]
    - *Abhyanga*
    - *Murdhataila*
        - *Siroabhyanga*
        - *Sirodhara*
        - *Pichu*
        - *Sirovasti*
    - *Pratimarshanasya*
    - *Matravasti*
    - *Tarpana*

Examples of oils/*Ghrita*

KaphaVata- vishagarbhataila, Balataila, sahacharaditaila, Murchitatilataila, Panchagavyaghrita, karpasastyaditaila, Bramighrita

Pitta Vata- Mahanarayanataila, Kalyanakamghrita

Broad spectrum- *Danwantharamtaila, Kseerabalataila, Balaswagandhadi, Chandanabalalakshaditaila*,

- *Karnapoorana*
- *Gandoosha* if indicated

3. ***SWEDANA***

Special precautions have to be taken to the hydration status of the children.

- Procedure based therapies
  - *Parisheka sweda*
    - Commonly used medicines
      - *Dhanyamla*
      - *Balataila*
      - *Ksheerapaka of dasamoola, bala, eranda etc*
      - *Kwathas made of dasamoola, bala etc.*
  - *Nadee sweda*
    - *Dasamoola*
    - *Eranda patra*
    - *Chincha patra*
    - *Nirgundi patra*
  - *Upanaha*
    - *Vimlapana drugs used in salya tantra*
    - *Salwana*
    - *Jadamayadi churna*
    - *Dasanga lepa*
    - *Shastika*
  - *Pinda sweda*
    - *Patra pinda sweda*
    - *Sashtika Sali pinda sweda*
    - *Valuka sweda*
    - *Lavanasweda*
  - *Patasweda*
  - *Avagaha sweda*
    - *Dasamoola*
    - *Bala*
    - *Eranda patra*
    - *Any vatahara drugs.*
  - *Bashpasweda*
  - *Niragni sweda*
    - Sun bath
    - Guru *pravaranam*[lying on cot covered with blanket]
    - *Nivatam graham*[close all the doors and windows and fan or AC should not be working]

4. ***SODHANA*** [if needed, e.g. *Virechana*]

- *Mridu virechana*
    - *Mridweeka*
    - *Aragwadha*
    - *Trivrit*
    - *Falgu*

5. CONDITION SPECIFIC PROCEDURES SUCH AS BASTI

- *Vasti*
    - *Yoga vasti*
    - *Karma vasti*
    - *Kala vasti*
    - *Chaturbadra vasti*

Commonly used drugs for the *vasti chikitsa*

- Oils/Ghrita
    - *Sahacharadi taila*
    - *Danwantharam taila*
    - *Madhuyashtyadi taila*
    - *Ksheera bala taila*
- For *niruha kwatha*
    - *Eranda mooladi kwatha*
    - *Eranda moola*
    - *Dasamoola*
    - *Rasnasaptaka*
    - Regionally available *vatahara* drugs. In all *vasti* dravyas of *kwatha* or *kalka* adding *madanaphala* and *satapushpa* has to be used.

6. ***SAMANAOUSHADHI*** –

Kapha-Vatahara, Balya, Brimhana and Medhya.

Kwatha

Sr. No.	**Kwath**	**Indication**
1.	*Astavarga*	*Unmargavata*
2.	*Maharasnadikwatha*	When *brimhana* is needed
3.	*Danwantharamkwatha*	When *brimhana* is needed
4.	*Rasonadikwatha*	When *srotosodhana* is needed
5.	*Gandharvahastadikwatha*	When *apanavataanulomana* is needed
6.	*Badradarvyadikashaya*	When more *kaphavatahara* is required
7.	*Dasamoolakatutrayadikwatha*	when associated with *pranaudana kaphavarana* [Respiratory problems]

8.	*Indukanthakwatha*	when recurrent fever associated
9.	*Sahacharadikwatha*	When lower segment of the body is mostly affected
10.	*Prasarinyadikwatha*	when upper part is affected, when *brimhana* is needed

Arishta/Asava

Sr. no.	***Arishta/Asava***	**Indication**
1.	*Balarishta*	when *brimhana* is needed
2.	*Saraswatarishta*	when *vakpravritti* is affected
3.	*Aswagandharishta*	when *brimhana* is needed
4.	*Aravindasava*	As general tonic
5.	*Abhayarishta*	When *anulomana* is needed
6.	*Dasamoolarishta*	When *prana* symptoms predominates
7.	*Draksharishta*	When *vatapiitasamana* is needed

Gulika

- *Manasamitravati*
- *BrahmiVati*
- *YogarajaGuggulu*
- *Nirgundyadigulika*
- *Krimighnavati*
- *Agnitundivati*
- *Vishatindukavati … etc.*

Sneha

- *Balataila*
- *Danwantharam 101 (internal)*
- *DhanwantaramTaila*
- *Maharajaprasaraneetaila internal*
- *Karpasastyaditaila*
- *Rasataila*
- *Kalyanakamghrita / Maha Kalyanaka Ghrita*
- *Panchagavya / MahapanchagavyaGhrita*
- *AsanabilvadiTaila – for head*
- *VachalashunadiTaila – as ear drops / Karnapoorana*

- *AnuTaila / ShadbhinduTaila – for Nasya*
- *Mahanarayanataila*
- *Triphaladitaila- for head*
- *Jyothishmatitaila … etc.*

Rasoushadhi

- *SmritisagaraRasa*
- *Kumarakalyana Rasa*
- *Brihatvatachintamani Rasa*
- *Ekangaveera Rasa*
- *Vatakulantaka Rasa*
- *Yogendra Rasa*
- *VataVidhwamsa Rasa*
- *Navajivana Rasa*
- *Samirapannaga Rasa*
- *Rasaraja Rasa*
- *VataGajankusha Rasa … etc*

Avaleha

- *Kalyanakagulam*
- *Manibadramgula*
- *Chyavanaprasarasayana*
- *Brahma rasayana*
- *Villwadilehya … etc*
- *Kooshmandarasayana*
- *Aswagandhadilehya*

Churna

- *Rajanyadichurna*
- *Hingwashtakachurna*
- *Gulgulupanchapalachurna*
- *Sankhapushpeechurna*
- *Aswagandhachurna*
- *Balachaturbadrachurna*
- *Pippallichurna*
- *BalachaturbhadraChurna*
- *Medhyarasayanachurna[Mandukaparni, yashtimadhu, guluchi, sankhapushpi]*
- *Vachachurna*

Bhasma

- *SuvarnaBhasma*
- *AbhrakaBhasma*
- *MuktaPishti*
- *GodantiBhasma*

- *PravalaBhasma*
- *Sudhavarga*

7. RASAYANA

- *AmalakeeRasayana*
- *Ashwagandha*
- *Shatavari*
- *Guduchi*
- *Dasamoola Harithaki*
- *Kooshmanda Rasayana*
- *All MedhyaRasayana yoga*
- *SwarnayuktaRasayana yoga*
- Judicious application of different *Ghrita yoga*
- *SilajathuRasayana*
- *Bala/ NagabalaRasayana*
- *Brahma Rasayana*
- *ChyavanaprashaAvalehaRasayana*

- **GENERALGUIDELINES**
    - Procedure based therapies to be followed in general as per requirement of the patient's need, the commonly adopted procedures are listed below:
        - *Udwarthana*
        - *Abhyanga*
        - *Swedana*
        - *Basti*
        - *Nasya*
        - *Sirolepa*
        - *Murdhataila*
        - *Dhoopana*
        - *Mukhalepa/Jihwanirlekhana/Pratisarana*
        - *Sirodhara*
        - *Anjana*
        - *Tarpana*

    - *Shamana* medicines
    - Other disciplines
        - Physiotherapy
        - Occupational therapy
        - Speech therapy
        - Psychology consultation
        - Educational intervention
        - Social worker

- Modern consultation for medications if needed

REFERRAL CRITERIA TO MODERN CONSULTATION

- Uncontrolled seizure episodes
- For non-responding contractures and structural abnormalities [e.g. Severe scoliosis]
- Intractable infectious conditions
- Severe painful conditions
- Any problems in airway, breathing and circulation [ABC]
- Voiding dysfunction of acute nature[e.g.- Acute urinary retention]
- Acute medical and surgical emergencies
- With autistic features
- Osteoporosis
- Dental problems
- Cosmetic dysmorphisms
- Failure to thrive
- Visual and hearing impairment
- Non responding and Progressive conditions

SPECIFIC GUIDELINES AS PER THE TYPE OF CP

- Spastic CP: More importance towards the Snehana and Vatahara has to be given in addition to general guidelines
- Atonic CP: More importance towards the Rukshana and kaphavatahara has to be given in addition to general guidelines
- Ataxic /Athetoid/mixed: It is more Vata dominant condition with the involvement of other Doshas. So a judicious application of management of Sira-SnayugataVata, Adha:pratihataVata has to be concentrated.

.

SPECIAL GUIDELINES FOR CO MORBID CONDITIONS

- Seizure disorders- **Annexure**
- Autism Spectrum Disorders features- **Annexure**
- Congenital malformations
- Learning disability
  - Remedial training
  - Individualized education plan
  - Special education plan
  - Inclusive education plan
- Mental retardation
  - Remedial measures
  - Individualized education plan
  - Special education plan

        - Inclusive education plan
        - Neuro-developmental exercises
    - Feeding problems
        - Identify the cause
        - Parental education
        - Remedial measures including surgery if required
    - Associated with other syndromes
        - Down syndrome
        - Progressive cerebellar lesions
        - Lesch-Nyhan syndrome
        - Tuberous sclerosis
        - Multiple neurofibromatosis
        - Ataxia Telengectasia
        - Sturge-Weber syndrome
        - Adreno-leukodystrophies etc…
    - Psychiatric Presentations
        - Evaluation with experts
        - Parental awareness and counseling programs
        - Treatment consensus with psychiatric experts
    - Activities of daily living [ADL] associated- **Annexure**
    - Children with already continuing conventional medicine
        - The medicines which are continuing presently with any other disciplines have to be evaluated while doing our management. On periodical evaluation of our treatment, while getting progress in the conditions, parents should be advised to go for reevaluation by the concerned specialty experts.

Closing Remarks:
Cerebral palsy is a symptom complex appears due to varied causes. According to the present knowledge, the brain development is complete by the age of 3 – 4 years. All the damages both structural as well as functional remain unaltered later. Though the present approach appears to be symptomatic, over a period of time, hypothetically various measures of Ayurveda, internal medications and procedures like *Basti* in particular have corrective action on these damages. Dosage forms that cross the blood-brain barrier [BBB] i.e. fat and/or alcohol based preparations (*Asava/Arishta* and *Ghrita*) would be ideal for this, and hence, after completion of the procedure based therapies, patients may be administered with drugs in these dosage forms for treating the root cause, especially of Rasayana drugs.

Management of CP with autism features

- *Unmadachikitsa* has to be applied along with the treatment guidelines given in the CP

- Autism is a condition where *ama* is prominent both in *koshta* and *dhatu* level, special precautions have to be taken while doing *snehana* and *sodhana* therapies.
- They should always be referred for the speech therapy, occupational therapy and behavioural modification consultations.
- Parental guidelines about activities of daily living in the form of *dinacharya* has to be given sufficient importance.
- Following drugs and procedure based therapies have to be added in addition to the existing protocols of CP
- *Vishahara* treatment has to be incorporated
- *Koshtachikitsa* should be taken in to consideration in every step of the management protocol
- For food selection and feeding rules ,following points have to be considered
    - Try to be a vegetarian maximum. Completely avoid shell fishes and meat
    - Food and sleep gap should be 1.5 hours
    - Administer complete gulten free and casein free diet
    - Wash hands, foot, ears, mouth and face before food with normal water/cold water
    - Amount of food should be as per his/her appetite- not as per nutritive value or affinity towards that food.
    - Eat only warm and fresh food.
    - Avoid too spicy and fried food
    - Eat in calm and quiet place
    - Eat with more number of family members together.
    - Enhance the use of ash guard. Yogurt should be strictly avoided

PROCEDURES

- *Sirodhara* with *ksheerapaka* of *vata pitta unmadaharadravyas*
- Orofacial massages with any suitable *vakpravrittikara* drugs like *kalyanavaleha churna*
- Yoga based approach as the age advances
- *Dhoopana* has to be given more emphasis
- *Nasya*

MEDICINES

- Application of *suvarna* in different form has to be ensured
- *Villwadigulika*
- *Manasamithramvati*
- *Dsuheevisharigulika*
- *Varavisaladikwatha*[similar to the yoga of *kalyanakaghrita]*

- *Balakanakapatradikwatha*
- *Saraswatharishta*
- *Aswagandharishta*
- *Kooshmandarasayana*
- *Rajanyadichurna*
- *Mahapaisachikaghrita*
- *Kooshmandaswarasaghrita*
- *Panchagavyamghrita*
- *Puranasarpis*
- *Lasoonadighrita*

If seizures are associated with CP prime importance should be given to seizure management. Look for the presence of *dosha* predominance of seizures and treat accordingly.

1) *VATIKA*
    - Epilepsy provoked on awakening the child
    - Associated auditory hallucinations
    - Excessive frothing from the mouth
    - Tonic and Clonic seizures
    - Pain as epileptogenic cause
    - Head ache preceded or in the post ictal phase
    - Associated with abdominal pain either as epileptogenic or in the post ictal phase.
    - The intensity, number of seizures are increased in the evening
2) *PAITTIKA*
    - Visual hallucinations
    - Aggressive behavior generally in child or at the time before and after the seizures
    - Fever associated convulsions. Association either in post ictal or well before seizures.
    - Reddening of eye
    - Post ictal diarrhea
3) *KAPHAJA*
    - Seizures mostly during sleep
    - Olfactory hallucination(phantosmia)
    - Excessive salivation rather than frothing
    - Absent seizures

- Post ictal sleep and vomiting
- Seizures Immediately after food

TREATMENTS

1) TREATMENT OF *VATA PAITIKA APASMARA*

- *Snehapana,* with *kalyanakamghrita, tiktakamghrita*
- *Swedanam-* mostly *parishekasweda* is best with *dasamoolaksheera*
- *Mrduvirechana-* with *kalyanakagulam, avipathychurnam*
- *Talam- with kachooradichurnam*
- *Pichu-* with *mahanarayanamtailam, Rasataila, danwantharamtaila+Karpasasthyaditaila, jyothishmatitaila*
- *Dasamoolaksheeradhara-* on head
- *Abhyanga* with *mahanarayanamtailam, katutaila, danwantharam+karpasasthyaditaila*
- *Nasya – Stanya, Ghritamanda as pratimarsa*
- *Rasayanas- Satavaree, Guluchee, aswagandha*

2) TREATMENT OF *VATA KAPHAJA APASMAARA*

- *Snehapaanam-pippalyaditaila, Mahapaisachikamghrita, Panchagavyamghrita*
- *Swedanam- naleeswedam, patrapotalasweda, tailaparishekam*
- *Vamanam-* if the child is more than ten years of age.
- *Mriduvirechanam-* with *avipathychurnam, triphala+aragwadhaphalamajja*
- *Nasya with anutaila, shadbindutaila*
- *Takradhara[koshna]-* with *dasamoolam, samnjasthaapanagana,*
- Strong *sweda* procedures like *valukasweda*
- *Kashayaparisheka* with *dasamoola and gomutra*
- *UshnaShirolepam* with *dasamoola, amalakee, samnjasthaapanagana* boiled i*n takra*
- *Samana* drugs- all *kaasaswaasahara* medicines in general, *Rasonadikashaya, vacha,*
- *Dhoopanam* in the rooms with *vachaadi yoga*
- *Rasayanam* with *lasoonaswarasa,vachachurnam, pippallirasayanam.*

3) TREATMENT OF KAPHAPAITIKA APASMARA

- No *snehapaana* is advisable in the initial stage in KP *apasmaara* instead we can adopt *ksheerapana* or *sadyasneha.*

Guducheeksheerapaka, aragwadhamahatiktakamsadyasneha are best in this case.

- *Mrduswedana* procedures like *dasamoolaksheeraparisheka*
- *Mrduvirechana*
- Usual *samana* drugs are *Patoladiganam, Arogyavardhinee, Pachanamruthamkashaya,Guluchyadikwatha*
- *Takradhara-sheetam*
- *Sirolepam-sheetam*
- *Nasyam* with *ksheerapakam* of *guduchee, danwantharam 101, ksheerabala 101*

LIFESTYLE GUIDELINES

ENSURE A TIME CHART ± 20 MINUTES FOR YOUR KIDS FOR FOLLOWING ACTIVITIES[punctuality ensures your brain sensors to streamline the neuronal activities]

o WAKING FROM BED
o BATH
o TOILETING
o FOOD
o EXERCISES/PHYSIOTHEREAPIES
o SLEEP
INCORPORATE YOUR CHILD ALWAYS WITH YOUR ALMOST ALL ACTIVITIES OF DAILY
LIVING
BE PLEASANT AND CHARMING ALWAYS WITH YOUR KID
YOU ARE THE BEST DOCTOR OR MANAGER OF YOUR KID

Food
Food and sleep gap should be 1.5 hours
Wash hands, foot, ears, mouth and face before food with normal water/cold water
Amount of food should be as per his/her appetite- not as per nutritive value or affinity
towards that food.
Eat only warm and fresh food.
Avoid too spicy and fried food
Eat in calm and quiet place
Eat with more number of family members together.
Enhance the use of ash guard. Yogurt should be strictly avoided

Don’t allow your child to sleep at day time except during summer and after exhausted

day.
Fumigate the room before sleep with following drugs. This should not be done in case of
allergic asthma tendency

oVacha, hingu,vidanga, nimbapatra, haridra, gulgulu.
Ensure the sleep not on floor.
YOGA
Do following yoga daily by parents in a calm and quiet place
Ensure the presence of your child with you while doing yoga
Gradually teach them how to do these procedures.

Sookshmavyaayamas

o Finger bending
o Wrist bending
o Elbow bending
o Shoulder rotation
o Neck forward , side and backward bending
o Leg – toe bending
o Knee rotation
o Hand in and out breathing

all these *asanaas* has to be appled as per the compliance of the child

Sittingaasanaas
- *Padmaasana*
- *Vajraasana*
- *Sukhaasana*
- *Ardhaushtraasana*

Standing aasanaas
- *Ardhakateechakraasana*
- *Ardhachakraasana*
- *Veerabadraasana*
- *Paadahastaasana*
- *Parivrittatrikonaasana*

Supine aasanas
- *Parvataasana*
- *makaraasana*

BATH
Should be on regular time
Apply the prescribed oil from doctor on head 15 minutes before bath
Hot water on body and normal water on head should be ensured.
Apply a pinch of *rasnaadichurnam* on head immediately after bath.

Concentration techniques

- Pranayama
- Daivavyapasraya procedures as per one's cultural acceptability
- Different concentration techniques and exercises

---

[i] Op ghai Text book of Pediatrics.

[ii] As. Sn.Ut. 3/10

[iii] Su. Ut. 27/9

[iv] Su. Ut. 27/16

[v] Madhav Nidana 6

[vi]शिरस्यभिहते मन्यास्तम्भार्दितचक्षुर्विभ्रममोहोद्वेष्टनचेष्टानाशकासश्वासहनुग्रहमूकगद्गदत्वाक्षिनिमीलनगण्डस्पन्दनजृम्भणलालास्रावस्वरहानिवदनजिह्मत्वादीनि, ----------
(चरकसंहितासिद्धिस्थानम् – 9/6

[vii]अत ऊर्ध्वमूर्ध्वजत्रुगतानि व्याख्यास्यामः- तत्र कण्ठनाडीमुभयतश्चतस्रो धमन्यो द्वे नीले द्वे च मन्ये व्यत्यासेन , तत्र मूकतास्वरवैकृतमरसग्राहिता च; ग्रीवायामुभयतश्चतस्रः सिरा मातृकाः, तत्र सद्योमरणं; शिरोग्रीवयोः सन्धाने कृकाटिके, तत्र चलमूर्धता;कर्णपृष्ठतोऽधःसंश्रिते विधुरे, तत्र बाधिर्यं; घ्राणमार्गमुभयतः स्रोतोमार्गप्रतिबद्धे अभ्यन्तरतः फणे, तत्र गन्धाज्ञानं;भ्रूपुच्छान्तयोरधोऽक्ष्णोर्बाह्यतोऽपाङ्गौ, तत्रान्ध्यं दृष्टयुपघातो वा; भ्रुवोरुपरि निम्नयोरावर्तौ नाम, तत्राप्यान्ध्यं दृष्टयुपघातो वा;भ्रुवोरन्तयोरुपरि कर्णललाटयोर्मध्ये शङ्खौ, तत्र सद्योमरणं; शङ्खयोरुपरि केशान्त उत्क्षेपौ, तत्र सशल्यो जीवेत् पाकात्पतितशल्यो वा नोद्धृतशल्यः; भ्रुवोर्मध्ये स्थपनी, तत्रोत्क्षेपवत्; पञ्च सन्धयः शिरसि विभक्ताः सीमन्ता नाम,तत्रोन्मादभयचित्तनाशैर्मरणं; घ्राणश्रोत्राक्षिजिह्वासन्तर्पणीनां सिराणां मध्ये सिरासन्निपातः शृङ्गाटकानि , तानि चत्वारि मर्माणि,तत्रापि सद्योमरणं ; मस्तकाभ्यन्तरोपरिष्ठात् सिरासन्धिसन्निपातो रोमावर्तोऽधिपतिः, तत्रापि सद्य एव | एवमेतानि सप्तत्रिंशदूर्ध्वजत्रुगतानि मर्माणि व्याख्यातानि ||२७||

(सु.शा.6/27)

[viii]तत्रादौ वातविकाराननुव्याख्यास्यामः|
तद्यथा- नखभेदश्च, विपादिका च, पादशूलं च, पादभ्रंशश्च, पादसुप्तता च, वातखुड्डुता च, गुल्फग्रहश्च, पिण्डिकोद्वेष्टनं च, गृध्रसी च,जानुभेदश्च, जानुविश्लेषश्च, ऊरुस्तम्भश्च, ऊरुसादश्च, पाङ्गुल्यं च, गुदभ्रंशश्च, गुदार्तिश्च, वृषणाक्षेपश्च , शेफस्तम्भश्च,वङ्क्षणानाहश्च, श्रोणिभेदश्च, विड्भेदश्च, उदावर्तश्च, खञ्जत्वं च, कुब्जत्वं च, वामनत्वं च, त्रिकग्रहश्च, पृष्ठग्रहश्च, पार्श्वावमर्दश्च,उदरावेष्टश्च, हृन्मोहश्च [४ , हृद्द्रवश्च, वक्षौद्धर्षश्च , वक्षौपरोधश्च, वक्षस्तोदश्च, बाहुशोषश्च, ग्रीवास्तम्भश्च, मन्यास्तम्भश्च,कण्ठोद्ध्वंसश्च, हनुभेदश्च , ओष्ठभेदश्च, अक्षिभेदश्च , दन्तभेदश्च, दन्तशैथिल्यं च, मूकत्वं च , वाक्सङ्गश्च, कषायास्यता च,मुखशोषश्च, अरसज्ञता च, घ्राणनाशश्च, कर्णशूलं च, अशब्दश्रवणं च, उच्चैःश्रुतिश्च , बाधिर्यं च, वर्त्मस्तम्भश्च, वर्त्मसङ्कोचश्च, तिमिरंच, अक्षिशूलं च, अक्षिव्युदासश्च, भ्रूव्युदासश्च, शङ्खभेदश्च, ललाटभेदश्च, शिरोरुक् च, केशभूमिस्फुटनं च, अर्दितं च, एकाङ्गरोगश्च,सर्वाङ्गरोगश्च, पक्षवधश्च , आक्षेपकश्च, दण्डकश्च, तमश्च , भ्रमश्च, वेपथुश्च, जृम्भा च, हिक्का च, विषादश्च, अतिप्रला

पश्च,रौक्ष्यं च, पारुष्यं च, श्यावारुणावभासता च, अस्वप्नश्च, अनवस्थितचित्तत्वं च; इत्यशीतिर्वातविकारावात विकाराणामपरिसङ्ख्येयानामाविष्कृततमा व्याख्याताः||११|| (च. सु. 20/11)

[ix]सङ्कोचः पर्वणां भेदोऽस्थ्नां पर्वणामपि||२०||
लोमहर्षः प्रलापश्च पाणिपृष्ठशिरोग्रहः|
खाञ्ज्यपाङ्गुल्यकुब्जत्वं शोषोऽङ्गानामनिद्रता||२१||
गर्भशुक्रजोनाशः स्पन्दनं गात्रसुप्तता|
शिरोनासाक्षिजत्रूणां ग्रीवायाश्चापि हुण्डनम्||२२||
भेदस्तोदार्तिराक्षेपो मोहश्चायास एव च|
एवंविधानि रूपाणि करोति कुपितोऽनिलः||२३।।

(च. चि.28/20-23)